

a like plurality of a space-time coding transmitters, each responsive to a different one of said channel coding encoders.

16. The transmitter of claim 15 where each of said space-time coding transmitters comprises:

a space-time encoder responsive to input signal of said space-time coding transmitter,

a modulator responsive to said space time-encoder,

pulse shaping circuitry responsive to said modulator, and

at least two antennas for transmitting a space-time coded signal created by said space-time encoder, modulated by said modulator, and conditioned by said pulse shaping circuitry.

17. The transmitter of claim 15 where each channel coder $i=1,2,...,L$ in said L plurality of channel coders develops codes at rate R_i , and the rates for different values of index i are not identical to each other.

18. The transmitter of claim 17 where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i $i=1,2,...,L$, that are such that $R_1 > R_2 > \dots > R_L$.

19. The transmitter of claim 17 where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i $i=1,2,...,L$, that are such that $R_1 < R_2 < \dots < R_L$.

20. The transmitter of claim 15 where said channel code encoder performs trellis encoding or convolutional encoding.--.

REMARKS

The specification was objected to because of a number of informalities. They are corrected herein by deleting the words "is then" in page 5, line 15, and by reversing the

relationship order in the equation found in page 5, line 24 and in page 14, line 18. Additionally, the word “Time” is included in the title, and information that was unknown at time of filing is supplied in page 1, line 14, and page 4, line 9. Other than the missing information, all of the changes are simply corrections of typographical nature, which do not narrow the scope of the outstanding claims. As amended, it is believed that the objection to the specification has been overcome.

Claims 8 was rejected under 35 USC 112 because it depends on a cancelled claim. This error is corrected.

Claims 3, 4 and 7 were rejected under 35 USC 102 as being anticipated by Calderbank et al, US Patent 6,127,971. Applicants respectfully traverse.

The Examiner asserts that the reference teaches a plurality of “channel coding/space-time coding transmitters,” pointing to element groupings such as 110, 110-1 and 110-2. It is respectfully submitted that while each of the groupings is a “transmitter,” it is NOT a “channel coding/space-time coding” transmitter. Based on the disclosure in the specification, a “channel coding/space-time coding” transmitter is an arrangement that comprises a channel coding element, followed by a space-time coding element, and followed still by some means that make the element a “transmitter.” The reference, in contradistinction, teaches a single encoding element in the aforementioned grouping (to wit, element 110) followed by elements 110-1 and 110-2 that make the grouping a “transmitter.” In other words, the cited patent does NOT have a serial connection of two encoding elements. Accordingly, it is respectfully submitted that claim 3 is neither anticipated, nor rendered obvious, by the cited reference.

Claim 4 defines the invention more specifically, providing detail regarding the elements that follow the space-time coding element. For the reasons set forth for claim 3, it is believed that claim 4 is, similarly, not be anticipated, or rendered obvious, by the cited reference.

Regarding claim 7, it is noted that the reference to trellis coding in the cited patent relates to the space-time coding that is carried out in the “one and only” coding element in each transmitter. Accordingly, it is believed that claim 7 is also not anticipated, or rendered obvious, by the cited reference.

Claims 3 and 8 are rejected under 35 USC 102 as being anticipated by Kotzin et al, US Patent 6,173,005. The Examiner asserts that the reference teaches a demultiplexer, citing element 803 in FIG. 8; and that the reference also teaches a plurality of “channel coding/space-time coding transmitters,” pointing to elements 304, 806 and 808 and to text at col. 14, line 3. Applicants respectfully traverse.

FIG. 8 of the reference describes a transmitter. Data is provided by processor 305 to element 304, where it is encoded. The encoded data is applied to element 308, where interleaving action takes place. The col. 14, line 3 text states that the interleaver of element 308 effectively provides a form of space-time coding. Thereafter, elements 803 splits the data into two channels, with one channel applied to transmitting element 806, and the other channel applied to transmitting element 808. The operative fact here is the all of the encoding is done first, and then data is split into two streams. In contradistinction, claims 3 and 8 specify the reverse: first splitting the data into streams, and then encoding it. Therefore, it is respectfully submitted that the Kotzing et al reference neither anticipates claims 3 and 8 nor renders them obvious.

Claim 8 was rejected under 35 USC 103 as being unpatentable over the Calderbank et al reference used in rejecting claim 3. The Examiner correctly assumed claim 8 to be dependent on claim 3. Applicants respectfully traverse the rejection. The above remarks demonstrate that claim 3 is neither anticipated nor rendered obvious by the Calderbank et al reference. It logically follows that claim 8 – which includes an additional limitation – is also not obvious in light of Calderbank et al.

Claim 7 was rejected under 35 USC 103 as being unpatentable over the Kotzin et al reference used in rejecting claim 3. Applicants respectfully traverse. The above remarks demonstrate that claim 3 is neither anticipated nor rendered obvious by the Kotzin et al reference. It logically follows that claim 7 – which includes an additional limitation – is also not obvious in light of Calderbank et al.

Applicants are appreciative that the Examiner found claim 5 and 6 allowable, if rewritten in independent form. Since applicants trust that the Examiner will agree with applicants’ present remarks and will rescind the rejections to claim 3. That would make claims 5 and 6 allowable without amendment and, therefore, they are not amended at this time.